

1 1. (withdrawn) A torque-transmitting assembly comprising:

2 a) a female coupling member with a bore;

3 b) a radially flexible member, received within the bore, defining a hollow shape  
4 with an opening; and

5 c) an elongated shaft member made of a super-elastic alloy, received within the  
6 opening,

7 whereupon relative motion among at least two of the members causes the  
8 radially flexible member to contact the shaft, inducing a super-elastic activation in  
9 the shaft that urges the shaft and radially flexible member into surface-to-surface  
10 contact, securing the members together in a fixed relative position.

1 2. (withdrawn) The assembly of Claim 1 wherein the radially flexible member has  
2 an external surface that frictionally engages the bore upon relative motion.

1 3. (withdrawn) The assembly of Claim 1 wherein the shaft is tubular with a  
2 cannulation.

1 4. (withdrawn) The assembly of Claim 3 wherein the bore of the female coupling  
2 member further comprises a cannulation aligned with the shaft cannulation, for  
3 common passage of a guide wire there through.

1 5. (withdrawn) The assembly of Claim 1 further comprising an inter-positional  
2 polymer sleeve for transmitting bending stress in the assembly.

- 1 6. (withdrawn) The assembly of Claim 1 wherein the contact occurs in one or  
2 more areas that frictionally carries the applied torque.
- 1 7. (withdrawn) The assembly of Claim 6 wherein the contact area is calibrated so  
2 that the contact slips at a preset torque before the failure strength of the shaft is  
3 reached.
- 1 8. (withdrawn) The assembly of Claim 1 wherein the female coupling member  
2 further comprises a counter-bore and the radially flexible member has an exterior  
3 surface adapted for engagement within the counter-bore.
- 1 9. (withdrawn) The assembly of Claim 8 wherein the radially flexible member is  
2 compressed within the counter-bore.
- 1 10. (withdrawn) The assembly of Claim 1 wherein the female coupling member is  
2 a fitting that connects the assembly to a cutting tool-bit or powered instrument.
- 1 11. (withdrawn) The assembly of Claim 1 wherein the female coupling member  
2 further comprises a fitting with a cutting tool-bit.
- 1 12. (withdrawn) The assembly of Claim 11 wherein the assembly is further  
2 connected to a powered instrument.
- 1 13. (withdrawn) The assembly of Claim 1 wherein the radially flexible member is  
2 a split collet.
- 1 14. (withdrawn) The assembly of Claim 1, the radially flexible member being in  
2 the form of a collar and made of super-elastic alloy, wherein the relative motion  
3 further induces a super-elastic activation of the collar.

1 15. (withdrawn) The assembly of Claim 1 wherein the collar further comprises a  
2 washer.

1 16. (withdrawn) The assembly of Claim 15 wherein the collar further comprises a  
2 series of washers.

1 17. (withdrawn) The assembly of Claim 14 wherein the super-elastic alloy is a  
2 nickel-titanium alloy.

1 18. (currently amended) A torque-transmitting coupling assembly comprising:

2 a) a split collet member having an exterior surface and an opening;

3 b) an elongated shaft member having solid walls and ~~made at least substantially~~ of  
4 an alloy selected from a group of alloys consisting of super-elastic, bi-metal alloys  
5 and super-elastic, tri-metal alloys, including super-elastic, bi-metal and tri-metal  
6 nickel-titanium alloys, received within the opening; and

7 c) a sleeve member having an aperture that receives the exterior surface of the  
8 collet,

9 whereupon relative motion among at least two of the members causes the opening  
10 to contact the shaft, the shaft and the collet being urged into surface-to-surface  
11 contact sufficiently to induce a martensitic activation of the super-elastic alloy,  
12 thus securing the members together in a fixed relative position.

1 19. (previously presented) The assembly of Claim 18 wherein interfering  
2 engagement of the exterior surface with the an aperture compresses the opening  
3 against the shaft, inducing the martensitic activation in the shaft.

- 1 20. (original) The assembly of Claim 18 wherein the shaft is tubular with a  
2 cannulation.
- 1 21. (original) The assembly of Claim 20 wherein either the sleeve or collet has a  
2 cannulation aligned with the shaft cannulation, for common passage of a guide  
3 wire there through.
- 1 22. (original) The assembly of Claim 18 further comprising an inter-positional  
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 23. (previously presented) The assembly of Claim 18 wherein surface-to-surface  
2 engagement occurs along one or more contact areas that frictionally carries the  
3 applied torque.
- 1 24. (original) The assembly of Claim 23 wherein the contact area is calibrated to  
2 slip at a preset torque before the failure strength of the shaft is reached.
- 1 25. (previously presented) The assembly of Claim 18 wherein the collet is adapted  
2 for connection to a cutting tool fitting or powered instrument.
- 1 26. (previously presented) The assembly of Claim 18 wherein the collet further  
2 comprises a cutting tool fitting.
- 1 27. (previously presented) The assembly of Claim 26 further adapted for coupling  
2 to a powered instrument.
- 1 28. (withdrawn) A torque-transmitting coupling assembly comprising:  
2 a) a fitting member formed with a counter-bore;

3 b) a collar member made of super-elastic alloy, having an exterior surface and an  
4 opening, the collar being located in the counter-bore; and

5 c) an elongated shaft member made of a super-elastic alloy, received within the  
6 opening;

7       whereupon relative motion between the fitting and the collar causes the  
8 collar to contact the shaft, inducing a super-elastic activation in the shaft that  
9 engages the shaft and collar into surface-to-surface contact, securing the members  
10 together in a fixed relative position.

1 29. (withdrawn) The assembly of Claim 28 wherein engagement of the exterior  
2 surface with the counter-bore super-elastically compresses the opening against the  
3 shaft.

1 30. (withdrawn) The assembly of Claim 29 wherein the collar further comprises a  
2 washer.

1 31. (withdrawn) The assembly of Claim 30 further comprising a series of washers.

1 32. (withdrawn) The assembly of Claim 28 wherein the super-elastic alloy is a  
2 nickel-titanium alloy.

1 33. (withdrawn) The assembly of Claim 28 wherein the shaft is tubular with a  
2 cannulation.

1 34. (withdrawn) The assembly of Claim 33 wherein the fitting has a cannulation  
2 aligned with the shaft cannulation, for common passage of a guide wire there  
3 through.

- 1 35. (withdrawn) The assembly of Claim 28 further comprising an inter-positional  
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 36. (withdrawn) The assembly of Claim 29 wherein the frictional engagement  
2 occurs along one or more contact areas that frictionally carries the applied torque.
- 1 37. (withdrawn) The assembly of Claim 36 wherein the contact area is calibrated  
2 so that the coupling slips at a preset torque before the fatigue strength of the shaft  
3 is reached.
- 1 38. (withdrawn) The assembly of Claim 28 wherein the fitting is connected to a  
2 cutting tool-bit or powered instrument.
- 1 39. (withdrawn) The assembly of Claim 28 wherein the fitting further comprises a  
2 cutting tool-bit.
- 1 40. (withdrawn) The assembly of Claim 39 further coupled to a powered  
2 instrument.
- 1 41. (withdrawn) A method of forming a torque-transmitting assembly, comprising  
2 the steps of:
- 3 a) providing a female coupling member with a bore;
- 4 b) providing a radially flexible member with an external surface and an opening,  
5 situating the radially flexible member within the bore
- 6 c) providing an elongated shaft member made of a super-elastic alloy, received  
7 within the opening; and

8 d) relatively moving at least two of the members, causing the radially flexible  
9 member to contact the shaft, inducing a super-elastic activation in the shaft that  
10 urges the shaft and radially flexible member into surface-to-surface contact,  
11 securing the members together in a fixed relative position.

1 42. (withdrawn) The method of Claim 41 wherein step d) further comprises  
2 frictionally engaging the members along a contact area that carries the applied  
3 torque, the contact area being calibrated to slip at a preset torque before the failure  
4 strength of the shaft is reached.

1 43. (withdrawn) The method of Claim 42 further comprising the steps of providing  
2 the female coupling member with a counter-bore, providing the radially flexible  
3 member in the form of a collar made of super-elastic alloy and inducing a super-  
4 elastic activation in the collar.

1 44. (withdrawn) The method of Claim 42 wherein step a) further comprises providing a  
2 radially flexible member in the form of a split collet.

1 45. (withdrawn) A flexible surgical reamer having a torque-transmitting assembly  
2 and comprising:

3 a) a fitting member formed with a counter-bore and including a cutting tool-bit;

4 b) a collar member made of super-elastic alloy, located in the counter-bore; and

5 c) an elongated shaft member made of a super-elastic alloy, adapted for receipt  
6 within the collar;

7           whereupon relative motion among the members causes the opening to  
8   contact the shaft, inducing a super-elastic activation in the shaft that urges the  
9   shaft and the collar into surface-to-surface contact, securing the members together  
10   in a fixed relative position.

1   46. (withdrawn) The reamer of Claim 45 wherein the collar is an annular member.

1   47. (withdrawn) The reamer of Claim 46 wherein the collar further comprises a  
2   washer.

1   48. (withdrawn) The reamer of Claim 47 wherein the collar further comprises a  
2   series of washers.

1   49. (withdrawn) The reamer of Claim 48 wherein the collar is pre-assembled with  
2   the fitting.

1   50. (withdrawn) The reamer of Claim 45 further comprising an inter-positional  
2   polymer sleeve for transmitting bending stress in the assembly.

1   51. (withdrawn) The reamer of Claim 45 wherein the contact occurs along an area  
2   that frictionally carries the applied torque.

1   52. (withdrawn) The reamer of Claim 51 wherein the contact area is calibrated to slip at a  
2   preset torque before the failure strength of the shaft is reached.

1   53. (withdrawn) The reamer of Claim 45 wherein the shaft is tubular, with a  
2   cannulation.

1   54. (withdrawn) The reamer of Claim 53 wherein the fitting has a cannulation that  
2   aligns with the shaft cannulation for passage of a guide wire through the reamer.



1 55. (withdrawn) A flexible surgical reamer having a torque-transmitting assembly  
2 and comprising:

3 a) a radially flexible member having a split collet with an exterior surface and an  
4 opening, and including a cutting tool-bit;

5 b) an elongated shaft member made of a super-elastic alloy, received within the  
6 opening; and

7 c) a sleeve having a bore that receives the exterior surface,

8 whereupon relative motion among the members causes the opening to contact the  
9 shaft, inducing a super-elastic activation in the shaft that urges the shaft and the  
10 collet into surface-to-surface contact, securing the members together in a fixed  
11 relative position.

1 56. (withdrawn) The reamer of Claim 55 wherein the exterior surface is  
2 compressed by the bore, further contracting the opening against the shaft to induce  
3 the super-elastic activation.

1 57. (withdrawn) The reamer of Claim 55 wherein the shaft is tubular with a  
2 cannulation for passage of a guide wire there through.

1 58. (withdrawn) The reamer of Claim 56 wherein the opening interferingly  
2 receives the shaft and is expanded to compress the exterior surface against the  
3 bore.

- 1 59. (withdrawn) The reamer of Claim 55 further comprising an inter-positional  
2 polymer sleeve for transmitting bending stress in the assembly.
- 1 60. (withdrawn) The reamer of Claim 55 wherein the contact occurs along an area  
2 that frictionally carries the applied torque.
- 1 61. (withdrawn) The reamer of Claim 60 wherein the contact area is calibrated to  
2 slip at a preset torque before the failure strength of the shaft is reached.
- 1 62. (withdrawn) The reamer of Claim 61 wherein the shaft is further connected to  
2 a powered instrument.